Coconino National Forest Plan Revision

Ponderosa pine

General Description

- The ponderosa pine forest vegetation community generally occurs at elevations ranging from approximately 5,000 to 9,000 feet *[will adjust elevation to be specific to Coconino NF]* and covers about 44 percent of the Forest. It is adjacent to Flagstaff and numerous other communities.

- It is dominated by ponderosa pine and commonly includes other species such as oak, juniper, and pinyon. More infrequently species such as aspen, Douglas-fir, white fir, and blue spruce may be present in small groups or individual trees. There typically is an understory of grasses and forbs and sometimes shrubs.

- The ponderosa pine forest vegetation community includes two sub-types: Ponderosa pine bunchgrass and ponderosa pine Gambel oak.

- It also contains unique features such as pine stringers. Pine stringers are noncontiguous, narrow communities of predominantly ponderosa pine that extend into the pinyon juniper woodland below the normal elevation distribution of ponderosa pine. They provide connectivity between the two vegetation types as well as a unique microclimate in lower elevation environs.

Desired Conditions (landscape scale: 10,000 + acres)

- The ponderosa pine forest vegetation community is a mosaic of tree species and forest conditions composed of trees from young to old. Old growth is well distributed across the landscape and occurs as groups of old trees mixed with groups of younger trees or occasionally as a patch comprised mostly of old trees.

- Forest appearance is variable but generally uneven-aged and open; occasional areas of even-aged structure are present. The forest arrangement is in individual trees, small clumps, and groups of trees interspersed within variably-sized openings of grass/forbs/shrubs vegetation associations similar to historic patterns. Size, shape, number of trees per group, and number of groups per area are variable across the landscape. Denser tree conditions exist in some locations such as north facing slopes and canyon bottoms.

- Aspen is an early seral component of a diverse pine ecosystem. It occurs in appropriate microsites such as northern aspects and canyons.

- In the Gambel oak sub-type, all sizes, structure (shrub or tree forms depending on site capability), and ages of oak trees are present. It is reproducing and maintaining its presence on suitable sites across the landscape.

- The ponderosa pine forest vegetation community is composed predominantly of vigorous trees interspersed with declining trees. Declining, top-killed, lightning- and fire-scarred trees provide

for snags. Ponderosa pine snags are typically 18 inches or greater at DBH and average 1 to 2 snags per acre. There are varying sizes of snags greater than 18 inches at DBH. In the Gambel oak subtype, large oak snags (>10 inches) are a well-distributed component. These, plus coarse woody debris (>3 inch diameter), are well-distributed throughout the landscape.

- Downed logs (>12 inch diameter at mid-point, >8 feet long) average 3 logs per acre within the forested area of the landscape. Coarse woody debris, including downed logs, ranges from 3 to 10 tons per acre and is generally well-distributed to maintain or improve long term soil productivity and provide important wildlife habitat.

- The composition, structure, and function of vegetative conditions are resilient to the frequency, extent and severity of disturbances and climate variability. The landscape is a functioning ecosystem that contains all its components (including snags, downed logs, coarse woody debris, and old trees), processes, and conditions that result from endemic levels of disturbances (e.g. insects, dwarf-mistletoe or pathogens, diseases, drought, fire, and wind).

- Grasses, forbs, shrubs, leaves, and needle cast (fine fuels), and small trees maintain the natural fire regime. Organic ground cover and native herbaceous vegetation provide protection from accelerated soil erosion, promote water infiltration, and nutrient cycling function in order to contribute to plant and animal diversity and to ecosystem function.

- Frequent, low severity fires (Fire Regime I) are characteristic in this type (Table 1).

- Natural and anthropogenic disturbances are sufficient to maintain desired overall tree density, structure, species composition, coarse woody debris, and nutrient cycling.

- Invasive plants do not occur at levels that disrupt ecological functioning.

- Plants used for ethnobotanical[1] purposes thrive here. There are *[number to be determined]* plants known to be used by tribes that traditionally use the forest.

Table 1. Fire regime groups and descriptions[2]

Fire regime	Fire return interval	Severity	Severity description
1	0-35 years	Low/mixed	Generally low severity fires replacing less than 25% of the dominant overstory vegetation; can included mixed severity fires that replace up to 75% of the overstory
2	0-35 years	Replacement	High severity fires replacing greater than 75% of the dominant overstory vegetation
3	35-200 years	Mixed/low	Generally mixed severity fires; can also include low severity fires

[1] Define ethnobotanical
[2] From Interagency Fire Regime Condition Class Guidebook 2008

4	35-200 years	Replacement	High severity fires
5	200+	Replacement/any severity	Generally replacement severity; can include any severity type in this frequency range.

Desired Conditions (mid-scale: 100 to 1,000 acres)

- The ponderosa pine forest vegetation community is characterized by variation in the size and number of tree groups depending on elevation, soil type, aspect, and site productivity. The more biologically productive forested sites contain more trees per group and more groups per area, resulting in less space between groups. Openings typically range from 10 percent in more productive forested sites to 70 percent in the less productive forested sites. Tree density within forested areas generally ranges from 20 to 80 square foot basal area per acre.

- The mosaic of tree groups generally comprises an uneven-aged forest with all age classes of all tree species present. Infrequently patches of even-aged forest structure are present. Disturbances sustain the overall age and structural distribution.

- Fires burn primarily on the forest floor at low intensity and do not spread between tree groups as crown fire. Single tree torching and isolated group torching is not uncommon.

- Forest conditions in goshawk post-fledging family areas (PFAs) are similar to general forest conditions except these forests contain 10 to 20 percent higher basal area in mid-aged to old tree groups than in goshawk foraging areas and the general forest. Goshawk nest areas have forest conditions that are multi-aged, but dominated by large trees with relatively dense canopies.

Desired Conditions (fine-scale: ≤ 10acres)

- Trees typically occur in irregularly shaped groups and are variably-spaced with some tight clumps. Crowns of trees within the mid-aged to old groups are interlocking or nearly interlocking. Openings surrounding tree groups are variably-shaped and comprised of a grass/forb/shrub mix. Some openings contain individual trees. Trees within groups are of similar or variable ages and may contain species other than ponderosa pine. Size of tree groups typically is less than 1 acre, but averages .5 acres. Groups at the mid-aged to old stages consist of 2 to approximately 40 trees per group.

- There are isolated occurrences of dwarf mistletoe, but the degree of severity and amount of mortality varies among the affected trees. Witches brooms[3] may form on infected trees, providing habitat for wildlife species.

Objectives

- Treat *[number to be determined] acres* of ponderosa pine to move toward desired conditions within 10 years following plan approval.

[3] Define witches broom

Guidelines *[will add intention to all guidelines in section]*

- A minimum of 6 nest areas (known or replacement) should be located per northern goshawk territory. Goshawk nest areas should generally be located in drainages, at the base of slopes, and on northerly (NW to NE) aspects. Nest areas should generally be 25 to 30 acres in size.

- In order to provide *[conditions to be determined]*, goshawk post-fledging family areas (PFAs) of approximately 420 acres in size should be designated surrounding the nest sites.

- In goshawk foraging areas and PFAs, groups of 3 to 5 reserve trees should be retained within management-created openings greater than 1 acre in ponderosa pine and dry mixed conifer, and 6 reserve trees should be retained within management-created openings greater than 0.5 acre in wet mixed conifer and spruce-fir, except where the strong potential for wind-throw prevents the possibility of viable reserve trees, or insect and/or disease prevent the eventual development of regeneration into large trees.

- Human presence should be minimized in occupied goshawk nest areas during nesting season, usually March 1 through September 30.

- In locations that are Fire Regime 2 or 3 and deficient in large old trees, large downed logs and large snags, these components should be protected from loss as a result of management activities. Exceptions would be if law, regulation, or policy dictated otherwise (e.g. for safety concerns).

- The intent of treatments in the wildland urban interface (WUI) is to reduce fire intensity and make fire suppression more effective, yet still remain consistent with desired conditions. Consequently, forest structure in the WUI[4] may have levels of snags, logs, coarse woody debris, and tree densities towards the lower end of the range of desired conditions for these components. In addition, the size and arrangement of tree groups may be at the lower end of the range of desired conditions than in non-WUI areas.

- *[will determine need for guidelines for alligator juniper or pine stringers]*

Management Approach – *[none currently identified]*

[4] Note –Coconino definition for WUI